CITY OF FORT COLLINS NATURAL AREAS PROGRAM

AMPHIBIAN SURVEY
2008 Annual Report

City of Fort Collins Natural Areas Program

naturally yours

ACKNOWLEDGEMENTS

Many thanks to the wonderful volunteers and NAP staff who donated their time to conduct the amphibian surveys! Special thanks to Dr. David Pettus for assisting with data entry, and Barb Kinnear and Kristie Parker for assisting with project organization. Tina Jackson, the Colorado Division of Wildlife State Herpetologist, assisted with volunteer training and answered numerous questions. Susan Schafer, Education and Outreach Coordinator with the City of Fort Collins Natural Areas Program, did a fantastic job of keeping all the volunteers organized and informed. Thanks to all – we hope you enjoyed the time spent on your natural areas!

If you have questions or comments about the information contained in this report, please direct inquiries to Erica Saunders, Environmental Planner, (970)416-2032 or esaunders@fcgov.com.

INTRODUCTION

Researchers and conservationists have expressed concern over the worldwide decline in amphibian populations, and changes that have been observed within those populations. Amphibians are often considered to be bio-indicators of environmental health so knowledge about their status is important for a better understanding of "the big picture." Across the United States, these concerns have led to the creation of a variety of amphibian monitoring programs at national, regional and local levels.

In 2008, the City of Fort Collins Natural Areas Program (NAP) initiated an audio amphibian monitoring program based on standardized national surveys, including the USGS North American Amphibian Monitoring Program (NAAMP) and FrogWatch USA, a partnership monitoring program with the USGS and the National Wildlife Federation. These model surveys are specifically designed to be completed by volunteers. Knowing the location and approximate population size of a given species is the first step in tracking any declines (or increases) associated with the species, so NAP's monitoring program focused on gathering this baseline information. Once the location and size of a population is known, more detailed studies tracking trends in population size and health may be conducted.

METHODS

Surveys were conducted by a combination of volunteers and NAP staff. In total over 80 people participated in the survey effort. Volunteers attended a training session in March 2008 to learn amphibian identification and were supplied with CDs of amphibian calls.

- **Survey sites:** Surveyors were assigned to natural areas (see Map 1 for distribution of natural areas in northern Larimer County) and established their own survey locations within each site using the general guideline of one-half mile between survey locations.
- **Survey periods:** Because not all amphibian species and individuals breed at the same time of year, surveys were conducted over three time periods, with a sample occurring at each site at least once during each period.

Survey Period	Dates
1	March 25 - April 30
2	May 1 – May 31
3	June 1 – July 10

Note that surveyors often surveyed the same locations during the three survey periods, but locations may have been modified throughout the season to avoid

disturbances, increase site coverage, etc. Therefore, each survey location may not have been surveyed during all three periods.

- **Survey conditions:** Surveys began at least 30 minutes after sunset and were generally completed by 11:00 p.m. Surveys were conducted when air temperatures were at least 42°F, wind speed was less than 19mph, and precipitation consisted of no more than light rain or drizzle.
- **Survey procedure:** Before and after a survey route was completed, surveyors recorded field conditions including wind speed, air temperature and sky condition. Water temperature was optionally taken at each survey location. When surveyors arrived to a survey location, they remained as quiet as possible to minimize disturbance to calling amphibians. Surveyors remained at each survey location for five minutes listening for amphibian calls. Calls were recorded by species using the following index:
    0- No individuals heard.
    1- Individuals can be counted. There may be space between calls.
    2- Calls of individuals can be distinguished, but there is some overlapping.
    3- Full chorus of calls. Constant, continuous, and overlapping.

  Surveyors were asked to contact NAP staff if they believed they heard the calling of an uncommon species; staff then conducted follow-up surveys to try to verify identification of these species.
- **Data processing:** Survey locations were digitized and stored in a geographic information system (GIS) database, along with associated amphibian calling indices for each survey period. For data summarization and reporting purposes, if the same location was surveyed multiple times throughout the season, the highest amphibian calling index recorded for a given species was used.

RESULTS & DISCUSSION

A total of 98 locations were surveyed across 36 natural areas and one certified natural area. (Certified natural areas are privately owned properties on which landowners have worked with the City of Fort Collins Natural Areas Program to protect, restore and enhance native animal and plant communities. These areas are not open to public access.) See Maps 2 and 3 for survey locations. Please note, however, that each survey location may not have been surveyed during each of the three survey periods. Amphibian calls were heard at 44 of the 98 locations. Location of amphibian observations is depicted on the maps in Appendix A. The maximum calling index of each species recorded throughout the entire survey is displayed on the maps by way of graduated circles (larger circles indicate a higher calling index). Natural Areas are separated into "Local" and "Regional" categories, with local meaning any areas within or in close proximity to Fort Collins. Regional natural areas include Bobcat Ridge, Gateway, and Soapstone Prairie. Table 1 below lists the amphibian species recorded by natural area. When viewing the maps and table, note that

data was recorded and is presented based on the location of the surveyors conducting the survey, not the location of calling amphibians.

Table 1. Amphibian species observed at City of Fort Collins Natural Areas.

NATURAL AREA	Chorus frog	Woodhouse's toad	Bullfrog	Other
LOCAL NATURAL AREAS				
Arapaho Bend	***Not surveyed***			
Butterfly Woods				
Cathy Fromme	X			
Cattail Chorus				
Colina Mariposa	X			
Cottonwood Hollow	X	X		
Coyote Ridge/McKee Farm	***Not surveyed***			
Eagle View				
Fischer				
Fossil Creek Reservoir	X			
Fossil Creek Wetlands	X			
Gustav Swanson	X		X	
Hazaleus				
Kingfisher Point			X	
Magpie Meander	X	X	X	
Mallard's Nest				
Maxwell	***Not surveyed***			
McMurry				
Nix			X	
North Shields Pond	X			
Pelican Marsh	X			
Pineridge	X	X		
Prairie Dog Meadows	***Not surveyed***			
Prospect Ponds	X			
Red Fox Meadows				
Redtail Grove	***Not surveyed***			
Redwing Marsh	X			
Reservoir Ridge	X	X	X	
River's Edge				
Riverbend Ponds	X	X		
Ross				
Running Deer	X	X	X	Northern leopard frog and northern cricket frog - unconfirmed reports

Salyer				
Springer	X			
Sterling	X	X		
Terry Cove Certified Natural Area (not publicly owned)				
The Coterie				
Two Creeks				
Udall	X	X		
Williams	***Not surveyed***			
REGIONAL NATURAL AREAS				
Bobcat Ridge	X	X		
Gateway		X		
Soapstone Prairie	X			
***Note: There are a few reasons why natural areas were not surveyed – for example, if a small natural area was adjacent to another natural area and was easily surveyed from the adjacent natural area, or if a volunteer who signed up to survey a natural area did not complete the survey and did not notify Natural Areas Program staff in order to find a replacement. Areas with no notation were surveyed but no amphibians were identified.				

Western chorus frogs (*Pseudacris triseriata*) and Woodhouse's toads (*Bufo woodhousii*) were the most common species recorded, and are generally considered to be the most common and widespread species within Larimer County. Chorus frogs were recorded at 39 of the 98 survey locations and were distributed across 20 natural areas. See Maps 4 and 5 for locations of chorus frog observations. Woodhouse's toads were recorded at 12 of the 98 survey locations and were distributed across 10 natural areas. See Maps 6 and 7 for locations of Woodhouse's toad observations.

The bullfrog (*Rana catesbeiana*), an invasive species which often eats native amphibians, was recorded at 6 sites (recorded at 7 of the 98 survey locations). See Map 8 for locations of bullfrog observations. Knowing the locations where bullfrogs occur is an important first step so that the Natural Areas Program can take measures to reduce their occurrence.

The northern leopard frog (*Rana pipiens*) and northern cricket frog (*Acris crepitans*), both state species of concern, were reported by volunteer surveyors at Running Deer Natural Area and the adjacent Environmental Learning Center, owned by Colorado State University (see Map 9). NAP staff members returned to this site multiple times to confirm these reports but were unable to do so. Further investigations will continue in the future in attempts to validate these reports.

The plains spadefoot *(Spea bombifrons*) was not recorded at any of the sites. Although this species has previously been recorded in Larimer County, we are not surprised that they were not recorded through this survey effort. Plains spadefoot spend

most of their life buried beneath the soil and emerge after heavy spring or summer rains to breed, often in temporary pools. Therefore, the window of opportunity for hearing the breeding call of this species is somewhat limited.

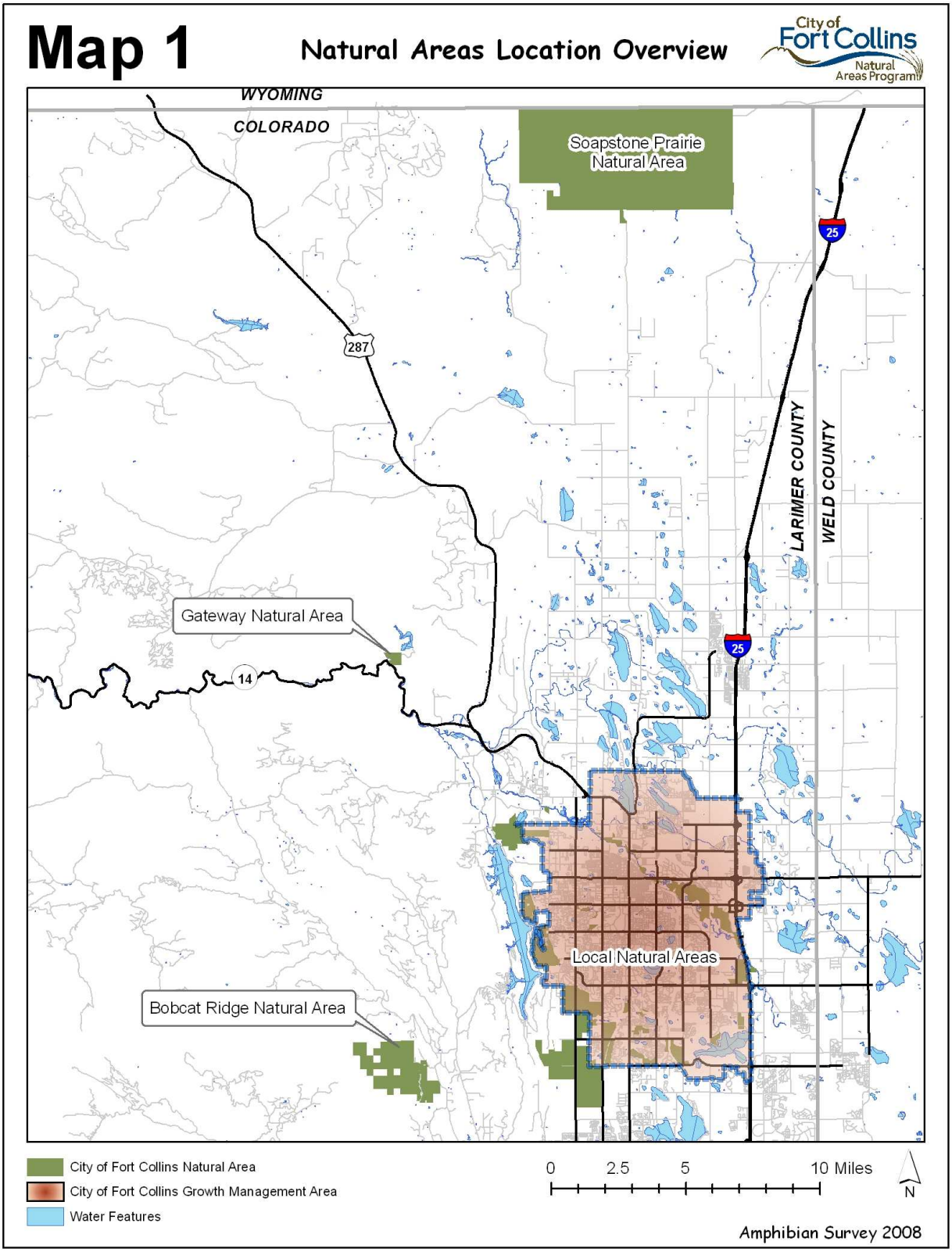
CONCLUSION

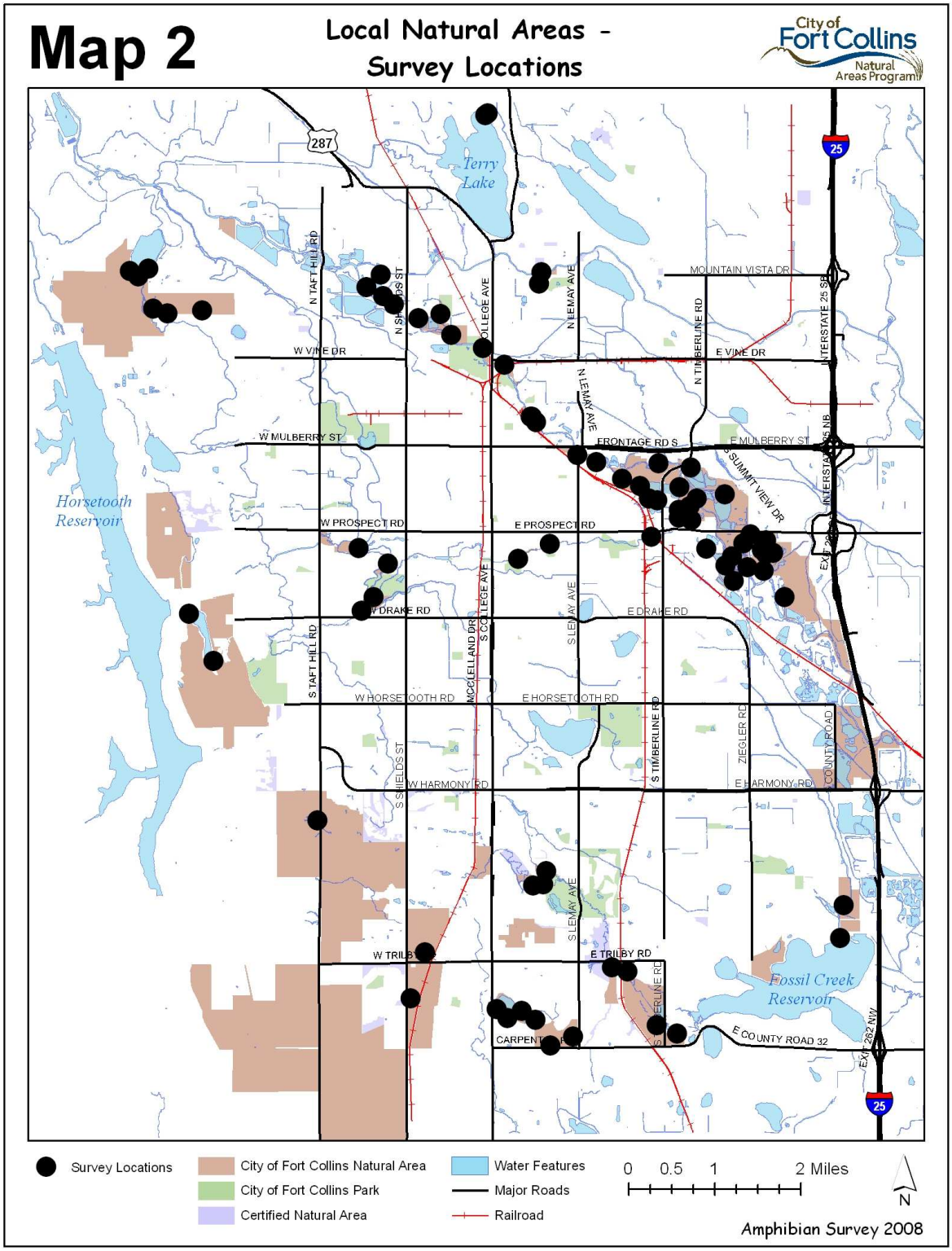
This 2008 survey was the first time that amphibians have been tracked by the Natural Areas Program through a widespread audio survey. It is difficult to make conclusions about trends in amphibian populations or occurrence since there is no previous information to compare this year's data to. However, by repeating this survey in the future, we will be able to look at trends through time. A coarse look at the results indicates that Western chorus frogs are widespread across the natural areas, and Woodhouse's toads are also well represented. Unfortunately, bullfrogs occur at several of the natural areas and NAP staff will be looking into different removal methods for this invasive species. Although reports are unconfirmed at this time, there may be rare species inhabiting sites along the Poudre River.

In addition to providing the Natural Areas Program with valuable baseline information on amphibian distribution across the natural areas, over 80 volunteers had the opportunity to learn more about amphibians and enjoy the natural areas with a different perspective. We hope that this effort helps to increase awareness and appreciation for amphibians.

APPENDIX A
MAPS

Map 1: Natural Areas Location Overview
Map 2: Local Natural Areas – Survey Locations
Map 3: Regional Natural Areas – Survey Locations
Map 4: Local Natural Areas – Chorus Frog Locations
Map 5: Regional Natural Areas – Chorus Frog Locations
Map 6: Local Natural Areas – Woodhouse's Toad Locations
Map 7: Regional Natural Areas – Woodhouse's Toad Locations
Map 8: Local Natural Areas – Bullfrog Locations
Map 9: Local Natural Areas – Unconfirmed Reports


Map 1
Natural Areas Location Overview
City of Fort Collins Natural Areas Program
WYOMING
COLORADO
Soapstone Prairie Natural Area
287
25
LARIMER COUNTY
WELD COUNTY
Gateway Natural Area
14
25
Local Natural Areas
Bobcat Ridge Natural Area
City of Fort Collins Natural Area
City of Fort Collins Growth Management Area
Water Features
0 2.5 5 10 Miles
N
Amphibian Survey 2008

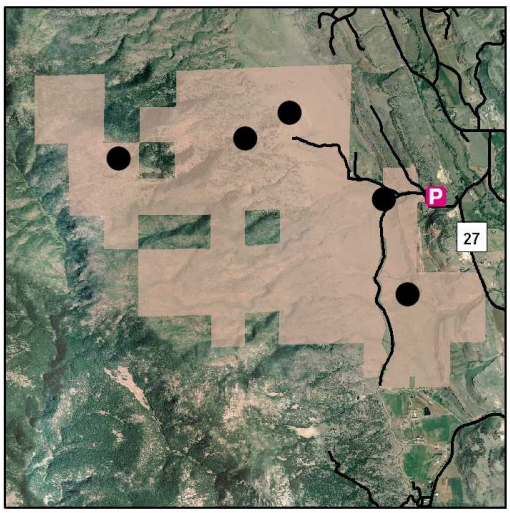

Map 2
Local Natural Areas -
Survey Locations
City of Fort Collins
Natural Areas Program
287
25
Terry Lake
Horsetooth Reservoir
Fossil Creek Reservoir
W VINE DR
E VINE DR
W MULBERRY ST
E MULBERRY ST
FRONTAGE RD S
W PROSPECT RD
E PROSPECT RD
W DRAKE RD
E DRAKE RD
W HORSETOOTH RD
E HORSETOOTH RD
W HARMONY RD
E HARMONY RD
W TRILBY
E TRILBY RD
E COUNTY ROAD 32
MOUNTAIN VISTA DR
N TAFT HILL RD
S TAFT HILL RD
N SHIELDS ST
S SHIELDS ST
N COLLEGE AVE
S COLLEGE AVE
N LEMAY AVE
S LEMAY AVE
N TIMBERLINE RD
S TIMBERLINE RD
ZIEGLER RD
COUNTY ROAD
S SUMMIT VIEW DR
INTERSTATE 25 SB
INTERSTATE 25 NB
Survey Locations
City of Fort Collins Natural Area
City of Fort Collins Park
Certified Natural Area
Water Features
Major Roads
Railroad
0 0.5 1 2 Miles
N
Amphibian Survey 2008

Map 3

Regional Natural Areas - Survey Locations

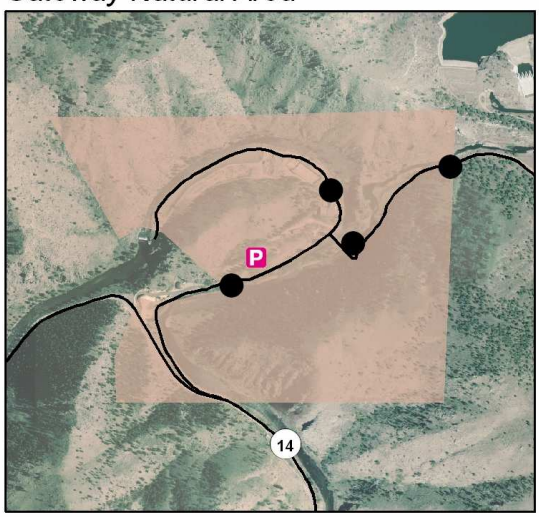
City of Fort Collins Natural Areas Program

Bobcat Ridge Natural Area



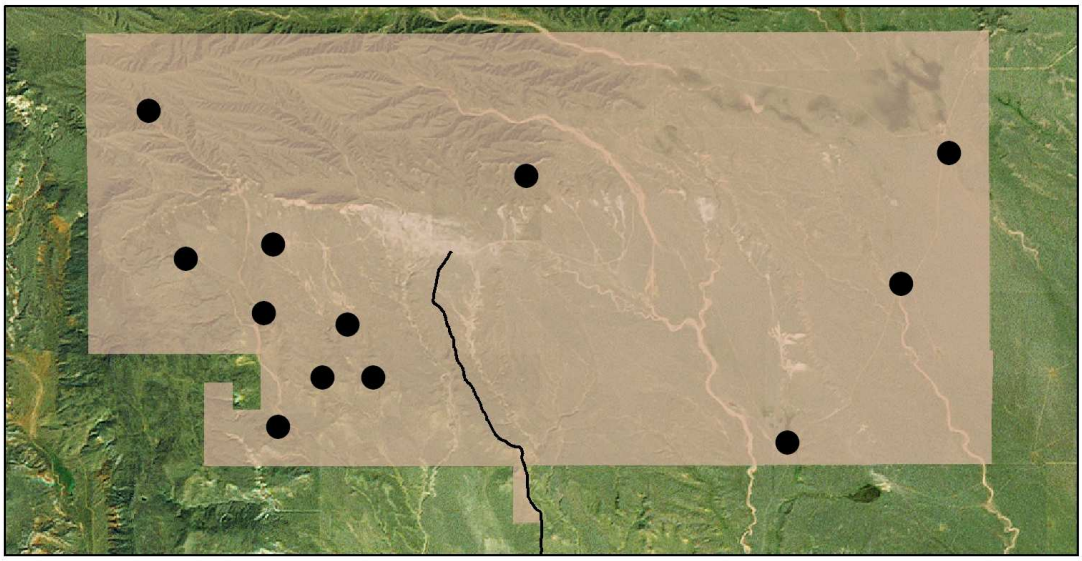
0 0.5 1 2 Miles

Gateway Natural Area



0 0.05 0.1 0.2 0.3 0.4 0.5 Miles

Soapstone Prairie Natural Area (will open to the public in 2009)



Survey Locations

City of Fort Collins Natural Area

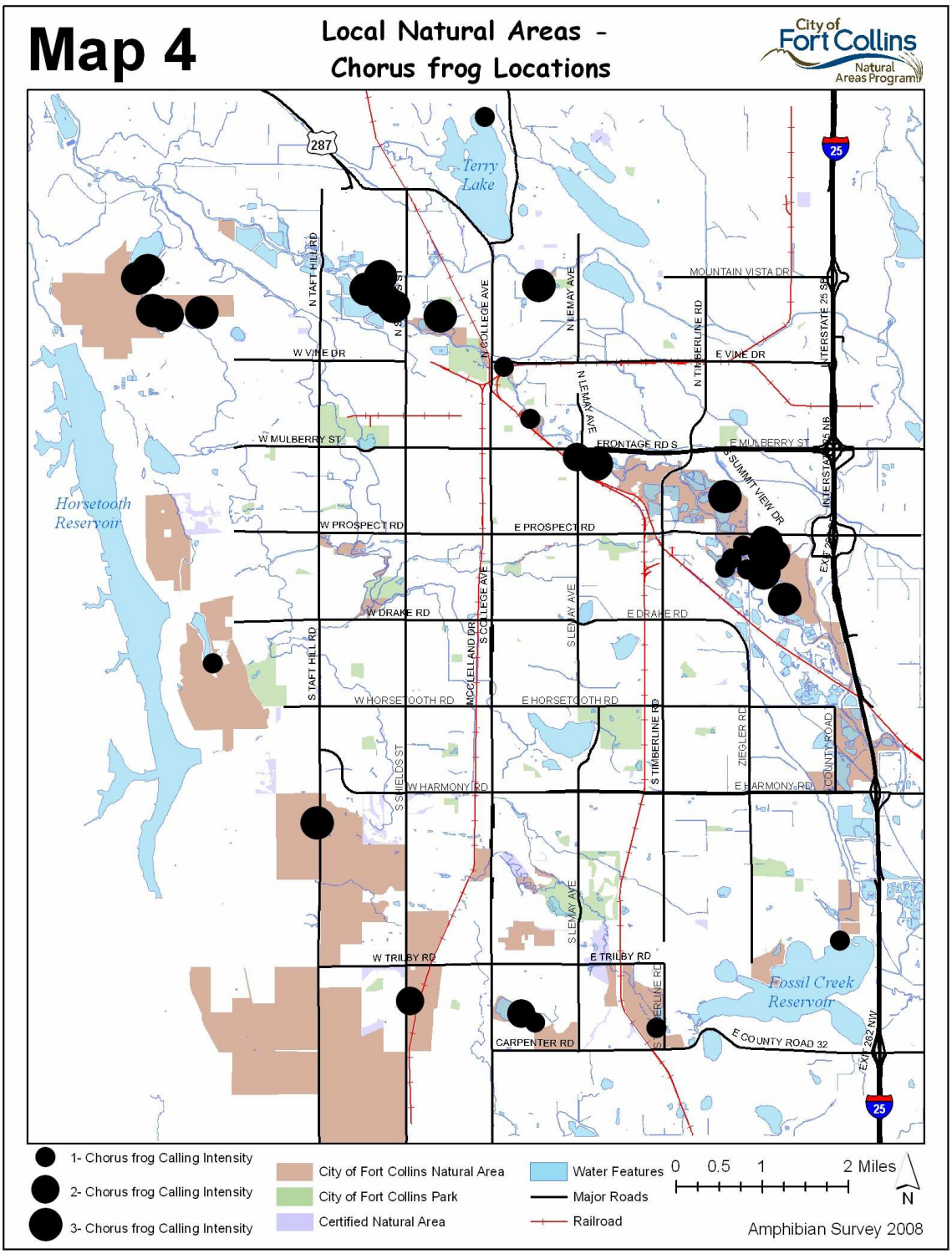
Roads

Parking Areas

0 0.5 1 2 Miles

N

Amphibian Survey 2008

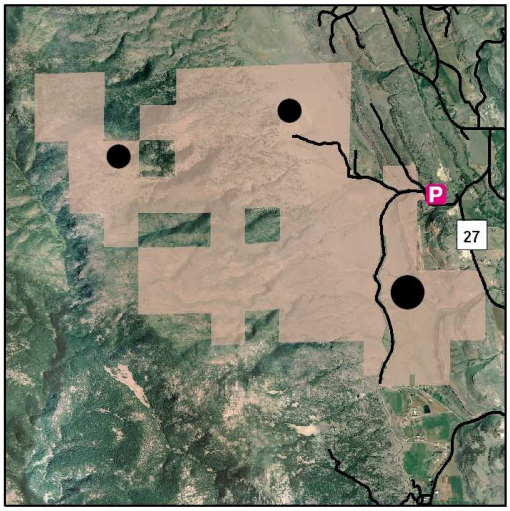

Map 4
Local Natural Areas -
Chorus frog Locations
City of Fort Collins
Natural Areas Program
Terry Lake
Horsetooth Reservoir
Fossil Creek Reservoir
287
25
W VINE DR
E VINE DR
W MULBERRY ST
E MULBERRY ST
FRONTAGE RD S
W PROSPECT RD
E PROSPECT RD
W DRAKE RD
E DRAKE RD
W HORSETOOTH RD
E HORSETOOTH RD
W HARMONY RD
E HARMONY RD
W TRILBY RD
E TRILBY RD
CARPENTER RD
E COUNTY ROAD 32
MOUNTAIN VISTA DR
N TAFT HILL RD
N COLLEGE AVE
N LEMAY AVE
N TIMBERLINE RD
INTERSTATE 25 SB
INTERSTATE 25 NB
SUMMIT VIEW DR
S TAFT HILL RD
S COLLEGE AVE
S LEMAY AVE
MCCLELLAND DR
S SHIELDS ST
S TIMBERLINE RD
ZIEGLER RD
COUNTY ROAD 9
EXIT 262 NW
1- Chorus frog Calling Intensity
2- Chorus frog Calling Intensity
3- Chorus frog Calling Intensity
City of Fort Collins Natural Area
City of Fort Collins Park
Certified Natural Area
Water Features
Major Roads
Railroad
0 0.5 1 2 Miles
N
Amphibian Survey 2008

Map 5

Regional Natural Areas - Chorus frog Locations

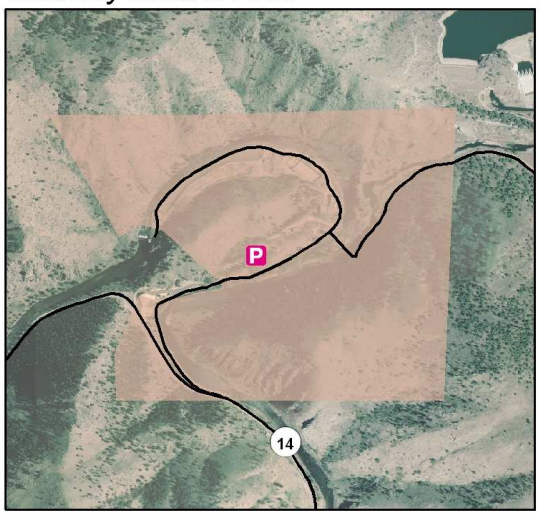
City of Fort Collins Natural Areas Program

Bobcat Ridge Natural Area



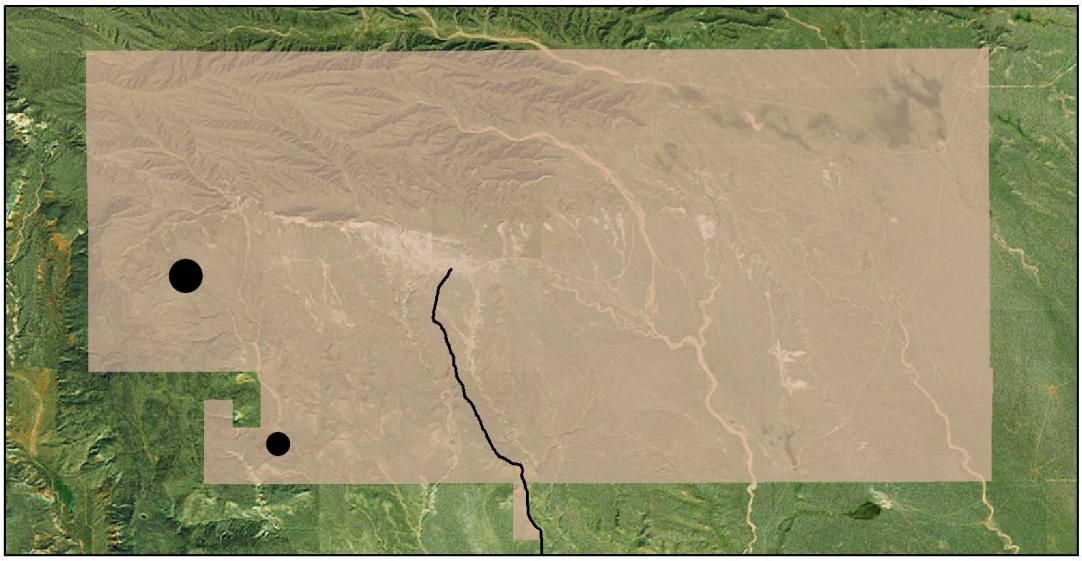
0 0.5 1 2 Miles

Gateway Natural Area



0 0.05 0.1 0.2 0.3 0.4 0.5 Miles

Soapstone Prairie Natural Area (will open to the public in 2009)



1- Chorus frog Calling Intensity

2- Chorus frog Calling Intensity

3- Chorus frog Calling Intensity

City of Fort Collins Natural Area

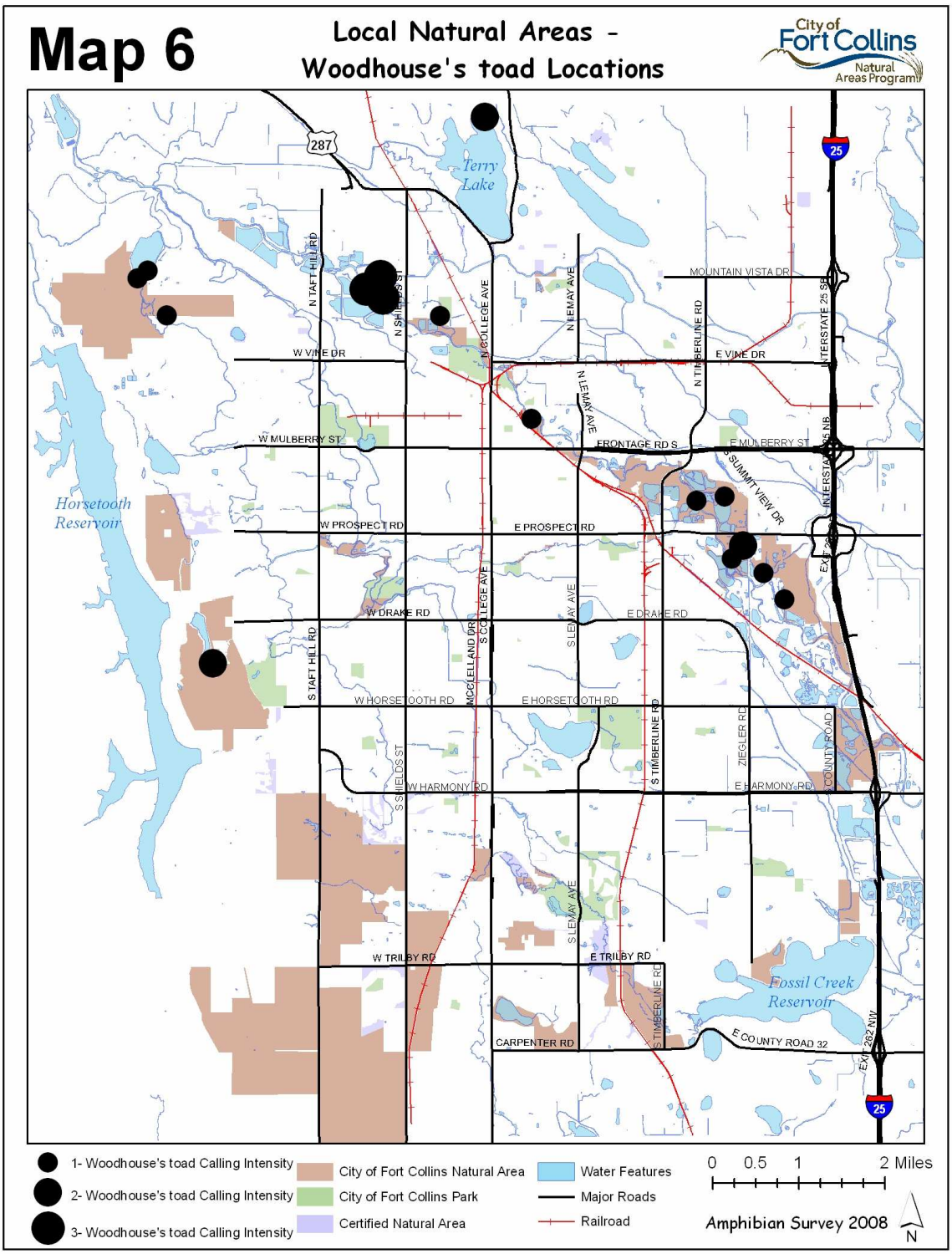
Roads

P Parking Areas

0 0.5 1 2 Miles

N

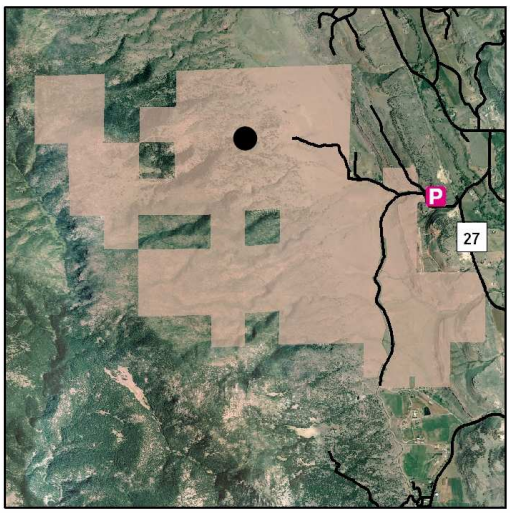
Amphibian Survey 2008


Map 6
Local Natural Areas -
Woodhouse's toad Locations
City of Fort Collins
Natural Areas Program
Terry Lake
Horsetooth Reservoir
Fossil Creek Reservoir
287
25
N TAFT HILL RD
N SHIELDS ST
N COLLEGE AVE
N LEMAY AVE
MOUNTAIN VISTA DR
N TIMBERLINE RD
INTERSTATE 25 SB
W VINE DR
E VINE DR
W MULBERRY ST
FRONTAGE RD S
E MULBERRY ST
INTERSTATE 25 NB
S SUMMIT VIEW DR
W PROSPECT RD
E PROSPECT RD
EXIT 265
W DRAKE RD
E DRAKE RD
S TAFT HILL RD
MCCLELLAND DR
S COLLEGE AVE
S LEMAY AVE
W HORSETOOTH RD
E HORSETOOTH RD
S TIMBERLINE RD
ZIEGLER RD
S COUNTY ROAD
S SHIELDS ST
W HARMONY RD
E HARMONY RD
W TRILBY RD
E TRILBY RD
CARPENTER RD
E COUNTY ROAD 32
EXIT 262 NW
1- Woodhouse's toad Calling Intensity
2- Woodhouse's toad Calling Intensity
3- Woodhouse's toad Calling Intensity
City of Fort Collins Natural Area
City of Fort Collins Park
Certified Natural Area
Water Features
Major Roads
Railroad
0 0.5 1 2 Miles
Amphibian Survey 2008
N

Map 7

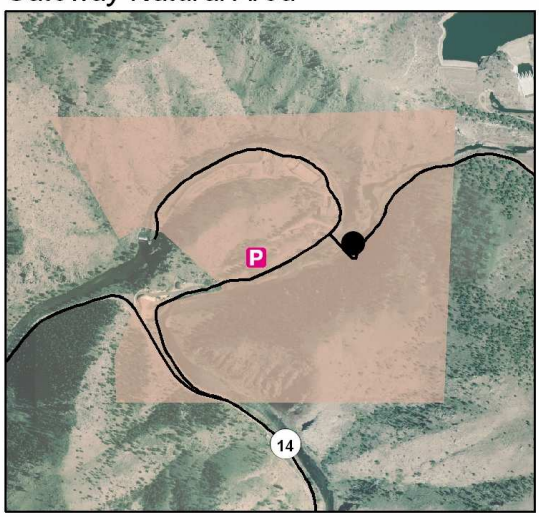
Regional Natural Areas - Woodhouse's toad Locations

Bobcat Ridge Natural Area



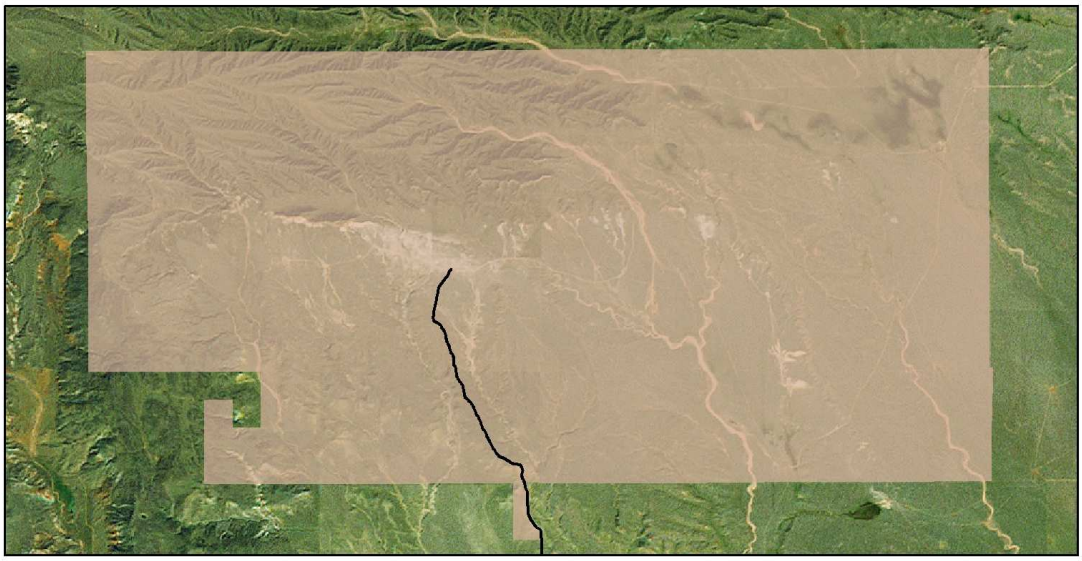
0 0.5 1 2 Miles

Gateway Natural Area



0 0.05 0.1 0.2 0.3 0.4 0.5 Miles

Soapstone Prairie Natural Area (will open to the public in 2009)



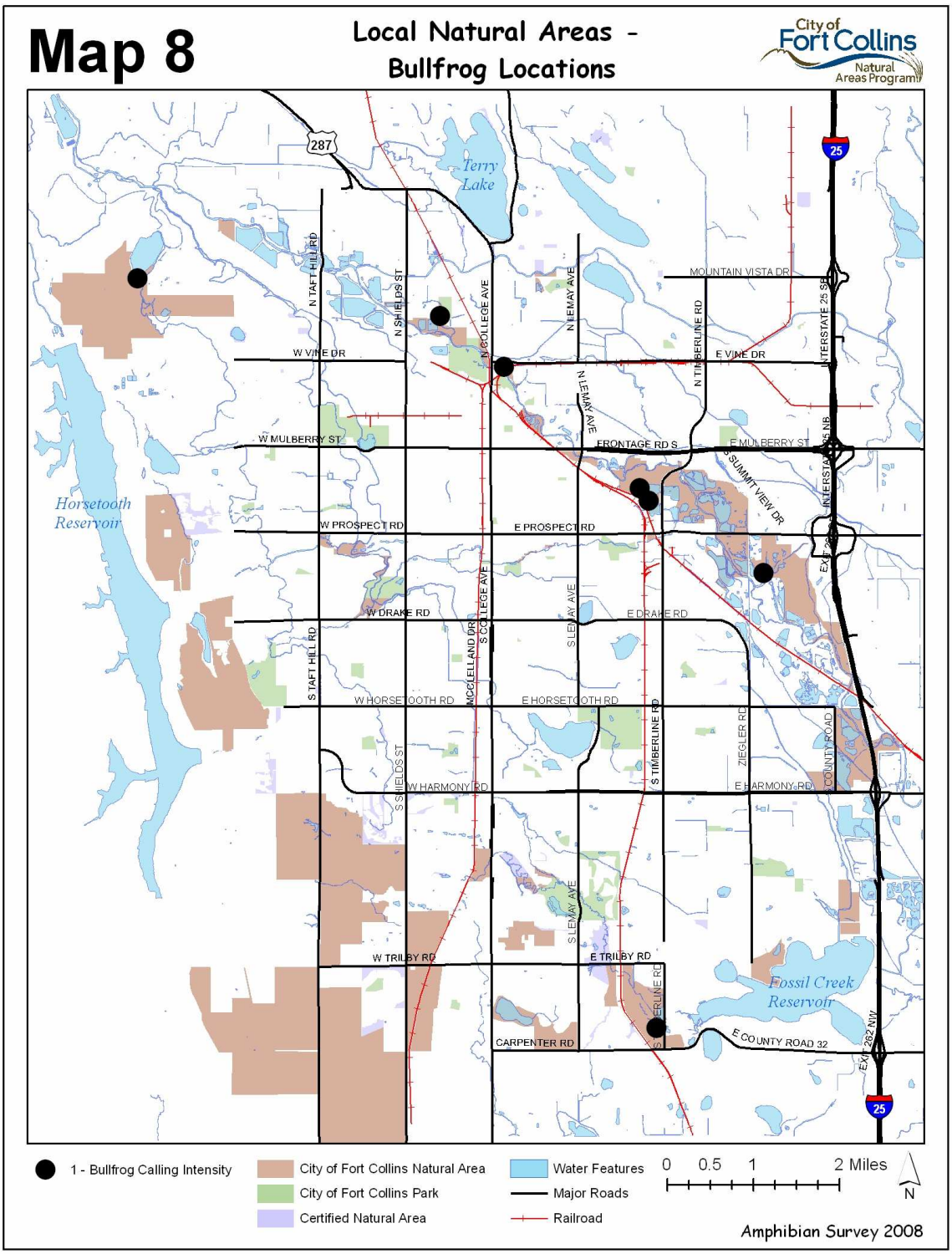
1- Woodhouse's toad Calling Intensity
2- Woodhouse's toad Calling Intensity
3- Woodhouse's toad Calling Intensity

City of Fort Collins Natural Area
Roads
P Parking Areas

0 0.5 1 2 Miles

N

Amphibian Survey 2008


Map 8
Local Natural Areas -
Bullfrog Locations
City of Fort Collins
Natural Areas Program
Terry Lake
Horsetooth Reservoir
Fossil Creek Reservoir
287
25
N TAFT HILL RD
N SHIELDS ST
N COLLEGE AVE
N LEMAY AVE
MOUNTAIN VISTA DR
N TIMBERLINE RD
INTERSTATE 25 SB
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W MULBERRY ST
FRONTAGE RD S
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INTERSTATE 25 NB
SUMMIT VIEW DR
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E PROSPECT RD
EXIT 265
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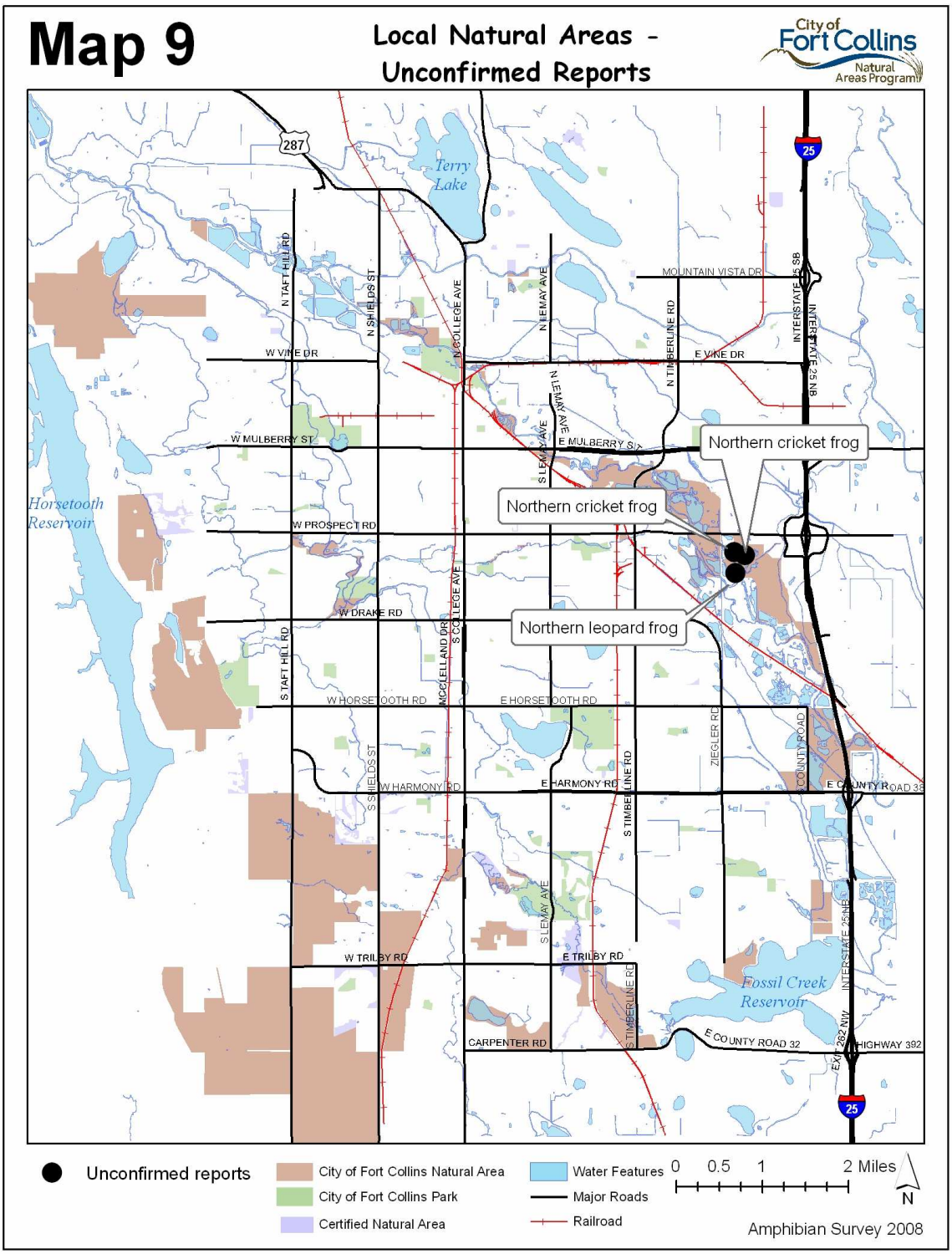
S COLLEGE AVE
S LEMAY AVE
MCCLELLAND DR
W HORSETOOTH RD
E HORSETOOTH RD
S TIMBERLINE RD
ZIEGLER RD
COUNTY ROAD
S SHIELDS ST
W HARMONY RD
E HARMONY RD
W TRILBY RD
E TRILBY RD
CARPENTER RD
E COUNTY ROAD 32
EXIT 262 NW
1 - Bullfrog Calling Intensity
City of Fort Collins Natural Area
City of Fort Collins Park
Certified Natural Area
Water Features
Major Roads
Railroad
0 0.5 1 2 Miles
N
Amphibian Survey 2008


Map 9
Local Natural Areas -
Unconfirmed Reports
City of Fort Collins
Natural Areas Program
Terry Lake
Horsetooth Reservoir
Fossil Creek Reservoir
Northern cricket frog
Northern cricket frog
Northern leopard frog
287
25
W VINE DR
E VINE DR
W MULBERRY ST
E MULBERRY ST
W PROSPECT RD
W DRAKE RD
W HORSETOOTH RD
E HORSETOOTH RD
W HARMONY RD
E HARMONY RD
W TRILBY RD
E TRILBY RD
CARPENTER RD
E COUNTY ROAD 32
HIGHWAY 392
E COUNTY ROAD 38
MOUNTAIN VISTA DR
N TAFT HILL RD
S TAFT HILL RD
N SHIELDS ST
S SHIELDS ST
N COLLEGE AVE
S COLLEGE AVE
N LEMAY AVE
S LEMAY AVE
N TIMBERLINE RD
S TIMBERLINE RD
ZIEGLER RD
S COUNTY ROAD 9
INTERSTATE 25 SB
INTERSTATE 25 NB
INTERSTATE 25 NB
EXIT 262 NW
McCLELLAND DR
Unconfirmed reports
City of Fort Collins Natural Area
City of Fort Collins Park
Certified Natural Area
Water Features
Major Roads
Railroad
0 0.5 1 2 Miles
N
Amphibian Survey 2008